EXOKNOX

Digital Engineering Solutions

Data Driven Engineering with Functional Data Management

openMDM Working Group Annual Summit 2023
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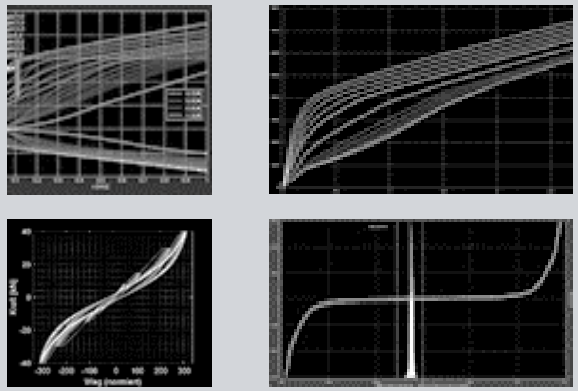
a product by

KARAKUN

www.karakun.com

Introduction

That’s what it’s about



Component- and system properties for functional development.
→ These properties define the ***DNA*** of a product

We call these properties ***“Functional Data”***

Others call it also “Technological Data” or just “Parameters”

EXOKNOX is a Data-Driven Functional Data Management System

→ The base system is like a Geo-PDM-System, but for functional data
- \+ components requirements management
- \+ order-/delivery management for supplier integration
- \+ (process automation)

→ EXOKNOX uses an extended openMDM model

Functional Data are the Basis of any Technical Development

EXOKNOX is an integration platform

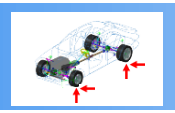
Use in R&D context

Technical product

Data required for the definition of complex mechatronic systems

Simulation Data Management


Results Data

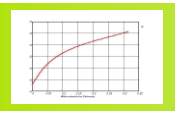

Tracks, Maneuvers, Load Cases



Both for Hardware and Simulation


Product structure

3rd party system

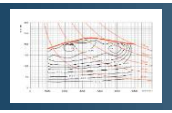

Geometry-related Data


Geometry CAD data

3rd party system


ECU code/ CAE models

3rd party system


Functional data

Big Data mngmt and analysis platform EXOKNOX^Lyzium Presented at the openMDM Summit 2022

We also feel comfortable in the management of material data and material models

Requires technology data for parameterization

Our FDM system EXOKNOX^hub and EXOKNOX^free

EXONOX is a reliable source for SDM systems

Why

When we started our activities, no functional data management system was available at the market, providing both

- product data management principles
- a data model representing component specific details like named channels, test conditions, ...

This Inspired Us to Develop a Functional Data Management (FDM) System

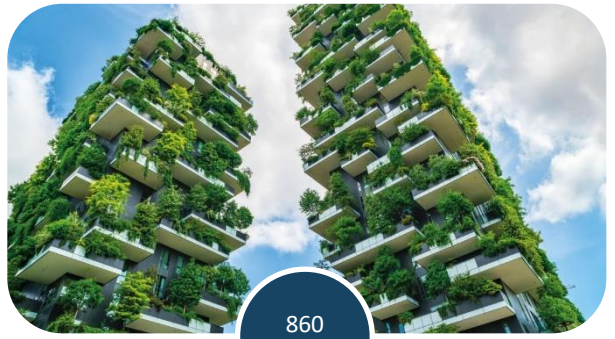
Efficiency and Data Quality

- ✓ As former simulation engineers, we know the pain points when it comes to handling functional data
- ✓ Basis for development speed are comprehensive functional data of high quality

Closed Process Chain

Efficient product development needs

- ✓ Up-to-date data for the entire development organization
- ✓ Simulation and test campaigns with quality-checked data
- ✓ Seamless supplier integration



Future-Proof

- ✓ Compliance with the prostep iViP / VDA data exchange format *FDX*
- ✓ Upcoming digital certification
- ✓ Demand for interoperable system - no vendor lock-in

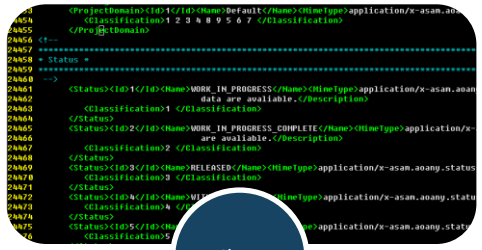
How

We created a unified digital workplace for all product development stakeholders.

The flexible data-driven approach uses an extended openMDM data model together with an own ODS server.

The FDM Solution is Based on Two Pillars

Providing the first end-to-end functional data management platform



Pilar 1

FDX Data Standard

- ✓ **FDX: Standard format of functional data** for sharing data between departments and with suppliers
- ✓ FDX uses **openMDM** and **ASAM ODS** as underlying standards

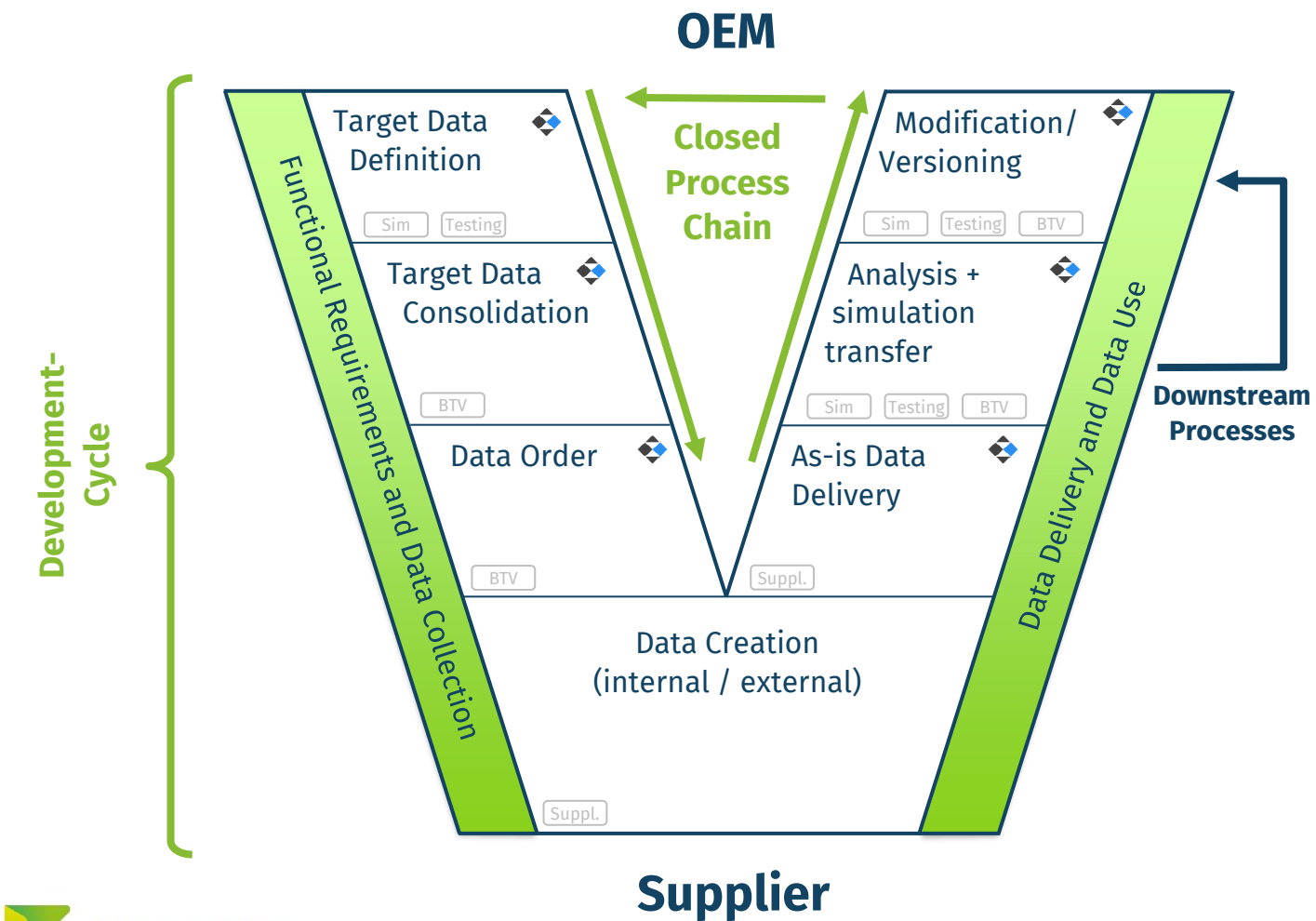
Pilar 2

Software Solution

- ✓ Implementation of **product data management principles**
- ✓ Realization of the **one-source principle**
- ✓ **Implements the FDX standard**
- ✓ **Process support**

Remark:
Using the openMDM data model and parts of the openMDM BL provides an elegant solution for the requirements of data model evolution

Closed Process Chain



EXOKNOX provides a closed functional data process across multiple development cycles:

- Target data objects allow all developers to define their **functional requirements** for the component or system.
- A component manager (BTV) can consolidate these requirements and thus **identify conflicting goals at an early stage**.
- Ordering functionalities **integrate** both internal and external **data suppliers** via the standardized FDX data exchange format.
- **Automated quality** checks prevent known and avoidable errors in as-is data.
- EXOKNOX offers **data analysis functions** and can perform data transformations via integrated Python scripts to supply data to **downstream processes** such as MBS simulations.
- Product data management functionalities such as versioning, status, roles and others ensure the **traceability of changes**.

What

Data-driven functional data management system in two variants

EXOKNOX^{hub}	→	Multi-User system based on a client-server infrastructure
EXOKNOX^{free}	→	Single-User application especially for part suppliers to ensure a closed process chain

EXOKNOX: A Unified Solution for Functional Data Management

Additional features not shown here:

- Metadata editors
- Metadata comparison
- Quality control views
- Integrated syntax checking

... and so much more!

For a demonstration of EXOKNOX, contact us at info@exoknox.com

Live Demo

1. Finding Data – Some examples amongst many possibilities
2. Data Editors – Context sensitive representation of a big data model
3. Data Comparison – Visual and tabular
4. Automation Scripts for Downstream Processes

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